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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,937	08/10/2000	I SOO LEE	YOU& I-1	3998

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EXAMINER

GONZALEZ, JULIO C

ART UNIT PAPER NUMBER

2834

DATE MAILED: 02/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/601,937

Applicant(s)

LEE, I SOO

Examiner

Julio C. Gonzalez

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5,6,9 and 10 is/are allowed.
- 6) ☒ Claim(s) 1,2 and 8 is/are rejected.
- 7) ☒ Claim(s) 3,4 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (Patent # 4,882,524) in view of Hermann (Patent # 3,610,978) and Sebastian et al (Patent # 5,982,067).

Lee discloses a constant power brushless DC motor comprising a stator 4 having multi-phases, each of the winding coils of the stator which are not connected with one another is connected to each H-bridge rectifier; a rotor 7 having predetermined number of polarities, which is required to concentrate magnetic flux on excitation area; a commutation encoder (see figure 1) including sensing regions and nonsensing regions (column 8, line 60-65), the commutation encoder being externally set to one side of the shaft 11 of the rotor; and two photo sensors (column 2, line 2) set to each phase, the two photo sensors being connected to half H-bridge of each phase, to turn on/off the half H-bridge, the distance between the sensing regions of the commutator encoder is determined to allow a

phases among n phases to be excited all the time, the a photo sensors recognizing the a phases excited (column 6, lines 8-15). Moreover, Lee discloses the distance between the sensing regions (column 4, lines 27-34), the number of sensing regions in the commutation encoder (column 4, lines 20-22) and the distance between the photo sensors on a sensor plate (column 5, lines 41-45). Also, Lee discloses that the number of phases inexcited can be more than one (column 5, lines 59-64).

However, Lee does not disclose making narrow slots for dealing with flux cancel phenomenon.

On the other hand, Hermann discloses for the purpose of reducing eddy current losses, a motor with narrow slots or closed slots may be used to suppress harmonics of flux density (column 1, lines 60-64). Moreover, Hermann discloses that the motor is able to produce a constant power (torque) (column 1, lines 11, 12, 17, 18 & figure 1 & column 3, lines 12, 13).

However, neither Lee nor Hermann disclose explicitly coils connected in parallel.

On the other hand, Sebastian et al discloses explicitly coils of a brushless DC motor connected in parallel (see figure 5) for the purpose of obtaining high current and low voltage (column 4, lines 5-7).

It would have been obvious to one having ordinary skill in the art to design a brushless DC motor with multi phases as disclose by Lee and reduce the slots for the purpose of reducing eddy current losses as disclosed by Hermann and to have coils wounded in parallel for the purpose of obtaining high current and low voltage as disclose by Sebastian et al.

Response to Arguments

3. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the three references applied to motors and improvements to such devices. Moreover, two of the references (Lee and Sebastian et al) even deal directly to brushless DC motors.

4. In response to applicant's arguments, the recitation "constant-power brushless DC motor" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

5. Applicant's arguments filed 05/13/02 have been fully considered but they are not persuasive.

Lee (Patent # 4,882,524) discloses a brushless DC motor (see title) with a constant excitation winding phase which could lead to a constant output power (column 3, lines 34-37). Moreover, the windings are disclosed to be independently connected of other phases and may be connected in parallel (column 3, lines 22-28 & see figures 4A, 4B). Also, the prior art shows each phase of the stator is connected in parallel (column 2, lines 16-18 & column 7, lines 14-17) and the phases can be excited or inexcited since the commutator can turn on and off the

transistors thus cutting off the current to the phases which would make the phases been excited or inexcited (column 6, lines 8-15, column 7, lines 25-34).

Also, Lee shows as disclosed in claim 1 that the winding may not be connected to one another and are connected to H-bridge (see Lee's reference, figures 4A, 4B). About the torque, all of the three references disclose that the motors output torque. The claims rejected are not specific enough as to describe how constant is a constant output torque.

Lastly, about the slots removing the flux cancel phenomenon, it is well known in the art that $\text{Flux} = \Phi/A$ wherein Φ is the magnetic field and A is the cross section area. If the cross section area is smaller then by definition the flux will be higher thus if the slot area is smaller then the flux will be higher then flux will not be canceled. Moreover, Sebastian et al shows from figure 2 to figure 3 that the slots in a stator may be made smaller or wider depending on the need of the design.

Allowable Subject Matter

6. Claims 5, 6, 9 and 10 are allowed.
7. Claims 3, 4 and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio C. Gonzalez whose telephone number is (703) 305-1563. The examiner can normally be reached on M-F (8AM-5PM).

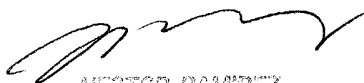
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371.

The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-1341 for regular communications and (703) 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


NESTOR RAMIREZ
SUPERVISOR PATENT EXAMINER
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Jcg

January 28, 2003